Wenxiang Yang 杨文翔

Intern

上海 · 同济大学 · 嘉定校区 · 计算机科学与技术专业

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"I have sworn the Programmer's Oath."

同济大学计算机科学与技术专业，大三暑假。本科期间通过 Mooc、发表论文和项目积累了丰富的机器学习和深度学习理论和实践经验。即将 Gap 的一年给予我充足时间对一个研究领域进行深入展开。

教育背景

同济大学 上海

土木工程专业 → 计算机科学与技术专业 *Sep. 2016 - PRESENT*

MOOC

- 分布式系统：MIT • 6.824: Distributed Systems
- 深度学习：USF • Fast.ai Practical Deep Learning for Coders 2018 Part1/Part2; Stanford • CS231n: Convolutional Neural Networks for Visual Recognition
- 机器学习：USF • Fast.ai Introduction to Machine Learning for Coders 2018; Coursera/Stanford • Machine Learning
- 其他：Coursera/University of Washington • Programming Languages, Part A/B/C; Stanford Lagunita • Algorithms: Design and Analysis

科研和技能

NeurIPS 2019（在投） *Vancouver, Canada*

共同第一作者 *Dec. 2019*

- 个人贡献：**独创**新的图像分割损失函数，以简单的方法和轻微的计算代价提升分割图像的**拓扑结构准确性**。在合成数据、在二维及三维分割数据集上进行充分的实验验证
- 积累编写大规模 GPU 计算程序的经验（GPU 数据并行以及模型并行）

CVPR 2018 Workshop, DeepGlobe Road Extraction Challenge *Salt Lake City, Utah, United States*

作者 *Jun. 2018*

- 论文 Stacked U-Nets with Multi-Output for Road Extraction **收录** CVPR DeepGlobe Workshop 2018 (paper #10)
- 提出多输出的**层叠 U-Net 结构**；使用混合损失函数解决样本不均衡问题；应用后处理方法提升 Recall。运用一系列深度学习模型**训练技巧**

岩石力学与工程学报（在投） 上海

第一作者 *May. 2019*

- 基于多输入、多输出的 AWD-LSTM 的 TBM 掘进参数及岩性和岩体分类预测研究
- 对 **40.8 亿组**原始数据进行多种预处理，利用数据增强扩大样本空间，**首次**将占据了多项自然语言任务的顶尖水准的 AWD-LSTM 应用至 TBM 参数和岩体分类预测

Skills

- 编程语言: (熟练) C++, Python, JavaScript, Golang, Bash Script | (熟悉) Java, Matlab, SQL
- 深度学习框架: (熟练) PyTorch, Fastai, Tensorflow, Keras
- 工具: Docker • MapReduce • React • React Native • Vue • LaTeX • Git • Vim
- 开发操作系统: Linux • macOS • Windows • iOS • Android

实习/项目经历

驭势科技 上海

IT 实习 *Jul. 2018-Sept. 2018*

- 在**生产环境**下部署服务; 开发、维护、调试工作面向公司内部的服务器硬件和软件平台
- 个人贡献：参与一次 OpenStack 集群故障的检测和恢复; 搭建敏捷开发平台和负载均衡服务器、设计备份方案、容器化、整理文档; 使用 Java 和 JavaScript 进行 CRUD 网站前后端开发

2018 hackShanghai 上海

参赛者 *Jul. 2018*

- **上海市第六名**
- 设计一套私人订制的眼镜购物体验，利用深度学习进行个性化眼镜款式推荐、3D 建模定制眼镜规格、3D 打印现场交付
- 个人贡献：筛选 CelebA 数据集，训练基于 ResNet 的在线眼镜款式推荐分类模型。

2018 FC Bayern Hackdays *Munich, Germany*

参赛者 *Feb. 2018*

- 参加 **Adidas Challenge** 分赛场
- 个人贡献：以提高 Adidas 欧洲移动市场转化率为目标，在两天的时间内制造配套硬件和软件。硬件上用 Arduino 制造无线传输数据的动作传感器；软件上用 Matlab 进行传感器在空间路径的追踪和数据分析

其他信息/课外活动

研究兴趣

- 深度学习：基础研究（如损失函数、训练方法）• 图像分割 • 自然语言处理 • 表格数据
- 分布式系统

开源活动

- Pull Request: 3 Merged
- Issues: 1 Open, 1 Closed

2018 ACM 中国图灵大会志愿者 上海

摄影组组长 *May. 2018*

美国土木工程师协会 (ASCE) 混凝土轻舟队 同济大学土木工程学院

队员 *May. 2017 - Oct. 2017*

泛长三角地区模拟联合国大会 浙江大学

参赛者 *Nov. 2016*

同济大学社团联合会 上海

摄影组组长 *Sep. 2016 - Sep. 2017*

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Summary

I just finished my third year of undergraduate Computer Science program at Tongji University. I've gained both theoretical and practical experience in machine learning and deep learning systems through extensive course work, research, and implementations. About to enter my gap year, I'm ready and excited to explore and dive deep into a research topic.

Education

Tongji University — *Shanghai*

Civil Engineering → Computer Science — *Sep. 2016 - PRESENT*

MOOC

- Distributed Systems: MIT • 6.824: Distributed Systems
- Deep learning: USF • Fast.ai Practical Deep Learning for Coders 2018 Part1/Part2; Stanford • CS231n: Convolutional Neural Networks for Visual Recognition
- Machine Learning: USF • Fast.ai Introduction to Machine Learning for Coders 2018; Coursera/Stanford • Machine Learning
- Misc: Coursera/University of Washington • Programming Languages, Part A/B/C; Stanford Lagunita • Algorithms: Design and Analysis

Research and Skills

NeurIPS 2019 (under review) — *Vancouver, Canada*

Co-author — *Dec. 2019*

- Propose a simple alternative loss function to Cross Entropy for image segmentation, which reduce topology errors such as broken boundaries and fragments. Experiments show the alleviation of saddle points in the optimization space, and significant topological improvements.
- Implemented large scale GPU algorithms.

CVPR 2018 Workshop, DeepGlobe Road Extraction Challenge — *Salt Lake City, Utah, United States*

Author — *Jun. 2018*

- Paper: Stacked U-Nets with Multi-Output for Road Extraction was accepted at CVPR DeepGlobe Workshop 2018 (paper #10)
- Proposed multi-output stacked U-Net model. Addressed sample imbalance using hybrid loss function. Post-processing methods, including road map vectorization and shortest path search, help improve recall. Employed a range of training tricks for deep learning model.

Civil engineering department (under review) — *Tongji University*

Author — *May. 2019*

- TBM parameter and rock mass prediction using multi- input and output AWD-LSTM.
- Raw data consisting of 4.1 billion samples is processed through six pre-processing steps and the sample space is augmented. For the first time, introduced the AWD-LSTM model to TBM parameter and rock mass prediction.

Skills

- Programming Languages: (Proficient) C++, Python, JavaScript, Golang, Bash Script | (Familiar) Java, Matlab, SQL
- Deep Learning Libraries: (Proficient) PyTorch, Fastai, Tensorflow, Keras
- Software Packs: Docker • MapReduce • React • React Native • Vue • LaTeX • Git • Vim
- Development OS: Linux • macOS • Windows • iOS • Android

Work/Project Experience

UISEE — *Shanghai*

IT intern — *Jul. 2018-Sept. 2018*

- Installed and maintained both server hardware and software. Deployed services under production environment.
- Participated in an OpenStack cluster rescue and recovery. Developed and documented containers of a Scrum platform and a load balancing service with backup plans. Participated in the development of a CRUD website using Java and JavaScript.

2018 hackShanghai — *Shanghai*

Participant — *Jul. 2018*

- Ranked the 6th
- Designed a novel personalized glasses shopping experience. Featuring personalization, I built a website to walk through the four-step shopping experience. Firstly an online deep learning system recommends the models of glasses and the 3D models are rendered in real-time for trial, then 3D modeling sensors collects the facial dimensions of the user, and finally a 3D printer prints the frame of choice for delivery.

2018 FC Bayern Hackdays — *Munich, Germany*

Participant — *Feb. 2018*

- Participated in Adidas Challenge
- Targeting at increasing the mobile conversion rate in the European market for Adidas, in two days, I built both hardware and software as a product. I built a wireless sensor using Arduino, then used Matlab to analyze the data and tracked the spatial trajectory of the sensor.

Other Information and Extracurricular Activities

Reasearch interest

- Deep learning: Fundamental research (loss functions and training strategies) • Image segmentation • Natural language processing • Tabular data
- Distributed system

Open source activities

- Pull Request: 3 Merged
- Issues: 1 Open, 1 Closed

2018 ACM Turing Celebration Conference — *Shanghai*

Leader of photography team — *May. 2018*

ASCE Canoe Team — *Civil Engineering Department*

Member — *May. 2017 - Oct. 2017*

Pan Yangtze River Delta Model United Nations — *Zhejiang University*

Participant — *Nov. 2016*

Association of Tongji University — *Shanghai*

Deputy Leader of Photography Department — *Sep. 2016 - Sep. 2017*